151854

CONSTRUCTION QUALITY ASSURANCE PLAN

SITE PREPARATION AND MATERIAL REMOVAL

PRE-FINAL DESIGN
ENVIRO-CHEM SUPERFUND SITE
ZIONSVILLE, INDIANA

Prepared For:
ENVIRONMENTAL CONSERVATION AND CHEMICAL CORPORATION TRUST

Prepared By:
AWD TECHNOLOGIES, INC.
INDIANAPOLIS, INDIANA

AWD PROJECT NUMBER 2259

DECEMBER 1992

NOTICE

This document is a portion of the overall design package and, therefore, cannot be referenced, in whole or in part, as a standalone document for any other purpose.

TABLE OF CONTENTS

TABLE OF CONTENTS (CONTINUED)

FIGURES

TABLES

1.0 PROJECT DESCRIPTION AND SCOPE OF WORK

1.1 Introduction

This Construction Quality Assurance Plan (CQAP) for the Site Preparation and Material Removal (SPMR) phase of the Remedial Action has been developed to control all construction related activities performed during site preparation for the support zone and removal of onsite materials (Contract Drawings C-2 and C-3).

The components to be developed and constructed during this phase of the Remedial Action are:

- Site grading and drainage
- Access road and aggregate paving surfaces
- Decontamination pad
- Wastewater storage pad
- Support zone security fencing and gates

1.2 Support Zone Component Construction Rationale

The support zone components will provide control over movement of vehicles, personnel, and materials during the materials removal activities and the subsequent phase of Remedial Action which includes the Soil Vapor Extraction (SVE) system and final cover. Roadways will support the movement of heavy equipment and commercial traffic into and out of the support zone, and heavy equipment and removed materials leaving the remedial exclusion zone (EZ). Roadways will also handle transport of removed items to different processing areas (i.e., bulking of liquid wastes, tank dismantling, and loading).

The decontamination pad will support the cleaning operations associated with tanks and other metallic debris, and vehicles and personnel leaving the EZ.

The wastewater storage pad will provide an area for containment of liquid waste tankers and spill control in the event of a release.

Fencing will prohibit the entry of unauthorized traffic and personnel into the support zone, and prevent the transfer of potential contaminants and contaminated materials out of the EZ.

1.3 CQAP Objectives

This document is one of the remedial design plans required by Exhibit A to the Consent Decree, the Remedial Action Plan. This CQAP is intended to organize testing methods appropriate to construction including, at a minimum, testing of the support zone construction materials prior to use, and testing of constructed components to ensure that they meet the Contract Specifications. AWD Technologies, Inc. has prepared a separate CQAP which will control the construction efforts during the SVE system and final cover construction phase.

This document is also intended to address certain comments by the U.S. EPA (letter dated February 21, 1992) provided in response to the ERM-North Central Contract Documents and Specifications for Remedial Action at the ECC Site, dated December 1991.

2

2.0 PROJECT ORGANIZATION AND RESPONSIBILITY

2.1 CQA/CQC Management Organization

Figure 2-1 presents a project organization chart which identifies areas of responsibility and lines of authority for the Site Preparation and Materials Removal construction activities and indicates how personnel will interact.

2.2 Responsibilities

Responsibilities of project personnel are described below.

2.2.1 Remedial Contractor's Project Manager

The Remedial Contractor's Project Manager shall have the primary responsibility for implementation of the project work in accordance with the project design plans, drawings, and specifications. The Project Manager shall also provide the necessary communications interface with the following personnel:

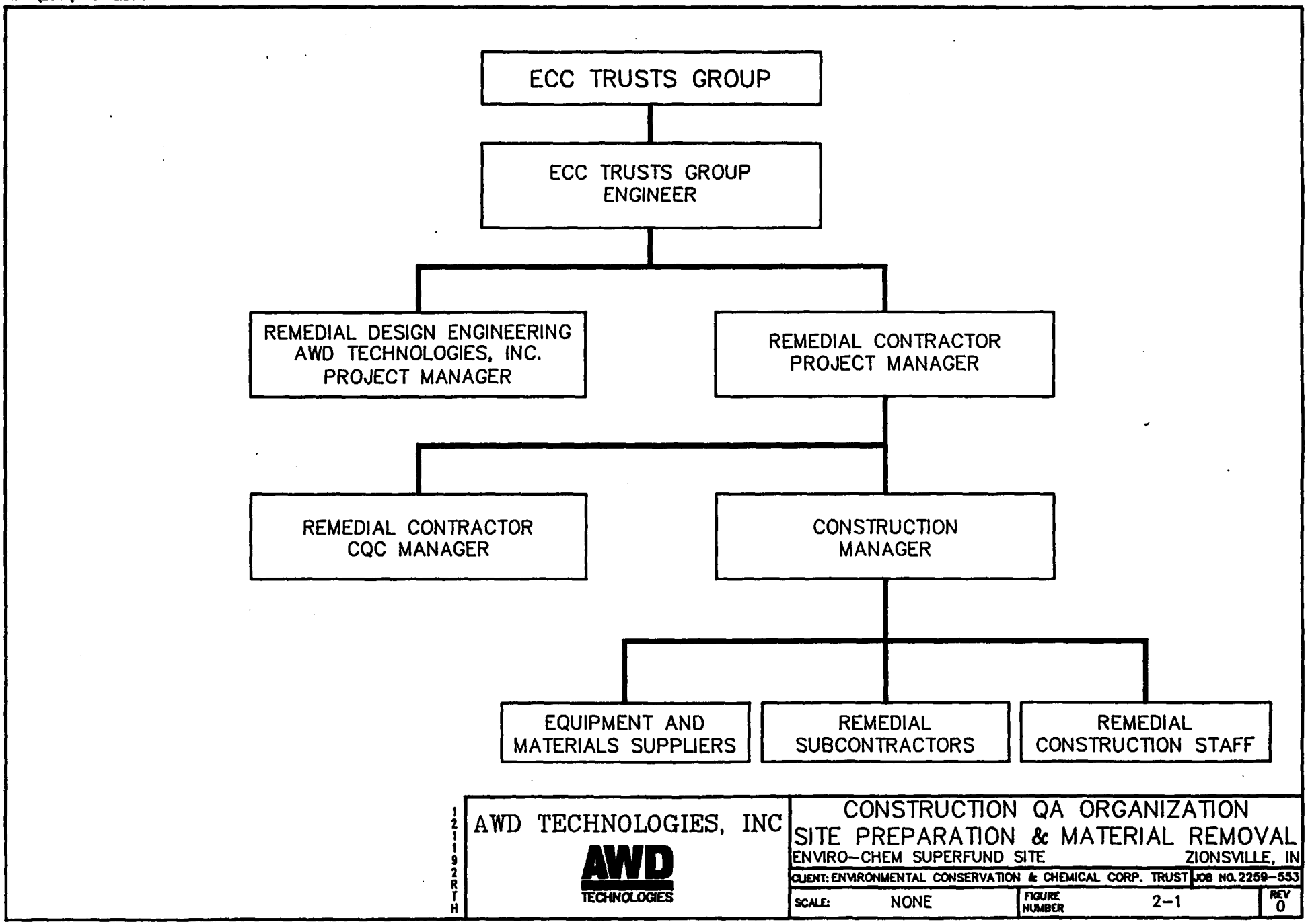
- ECC Trust's Engineer (Engineer)
- Remedial Design Project Manager

The Remedial Contractor's Project Manager, in the performance of his duties, may require a staff of technical and administrative people that will report directly to him. The technical staff will provide the day-to-day technical backup as it relates to the construction activities.

The administrative staff is necessary to perform day-to-day administrative functions. These administrative functions include such activities as:

- Tracking costs, invoices, billing
- Filing
- Organization and filing of the documentation

FILE: \ECC\FIG2-1E.DWG



12119 2RTH

AWD TECHNOLOGIES, INC

AWD TECHNOLOGIES

CONSTRUCTION QA ORGANIZATION
SITE PREPARATION & MATERIAL REMOVAL
ENVIRO-CHEM SUPERFUND SITE ZIONSVILLE, IN

CLIENT: ENVIRONMENTAL CONSERVATION & CHEMICAL CORP. TRUST | JOB NO. 2259-553

SCALE: NONE | FIGURE NUMBER 2-1 | REV 0

The Project Manager will report directly to the Engineer and will directly supervise the Construction Manager.

2.2.2 Design Engineering Project Manager

The Design Engineering Project Manager has the responsibility to provide a design which is capable of fulfilling the requirements as set forth in the Remedial Action Plan. Unexpected site conditions or changes in construction methodology could occur requiring design changes, therefore, the Design Engineering Project Manager must be an active participant in progression of the project construction.

The Design Engineering Project Management staff will provide support to the Project Manager's technical staff in the decision-making process for any required design changes. Any such changes will be fully documented. The Design Engineering Manager reports to the Engineer and supports the Remedial Contractor's Project Manager.

2.2.3 Construction Manager

The Construction Manager has the responsibility to construct the support zone components in strict accordance with the plans and specifications, using the necessary manpower, construction procedures, and techniques. The Construction Manager shall retain the responsibility and authority to direct and manage his employees and the equipment used in constructing the support zone components. The Construction Manager reports to the Remedial Contractor Project Manager.

Responsibilities of the Construction Manager are outlined below:

- Manage the daily performance of construction staff and oversee subcontractor activities.
- Prepare Daily Reports (Section 4.4.2).
- Prepare Progress Reports (Section 6.1.1).
- Maintain Submittal Register (Section 4.4.5).
- Prepare Report of Field Change (Section 4.4.6).
- Prepare Photographic Reporting Data Sheet (Section 4.4.9).

2.2.4 CQC Manager

The Remedial Contractor's CQC Manager and assigned staff shall function independent of the Remedial Contractor Construction Manager and the Engineer. The responsibility of the CQC Manager is to perform those activities specified in the CQAP which involves monitoring conformance to the plans and specifications by performing the necessary reviews, inspections, testing, and documentation.

The CQC Manager is responsible for overall management of the CQC system and has the authority to act independently in all quality control matters. The CQC Manager reports directly to the Remedial Contractor Project Manager for quality control purposes only. Responsibilities of the CQC Manager are outlined below:

- Manage the performance of all onsite and offsite inspections and testing.
- Review of the plans and specification for clarity and completeness.
- Schedule and coordinate inspection activities.
- Direct and support personnel in performing observations and tests.
- Evaluate the results of the inspections and testing.
- Notify the Project Manager of acceptance or rejection of the work and prepare the Non-Compliance Notifications, as necessary (Section 4.4.5).
- Manage documentation of all inspections and testing, and notifications to the Site Project Manager through Daily Quality Control reports (Section 4.4.4).
- Maintain project records.
- Prepare Final Certification of Completion Report (Section 6.1.2).

2.3 Personnel Qualifications

2.3.1 General

Personnel assigned to this project will have the necessary training, education, qualifications, and experience required to perform their specific duties. The required qualifications of key personnel is described in the following paragraphs.

2.3.2 Remedial Contractor's Project Manager

The Project Manager will possess a Bachelor of Science in engineering, or equivalent, having experience in construction supervision and be familiar with quality control and quality assurance aspects in construction. The Project Manager will possess good managerial and communications skills, and be familiar with waste disposal industry protocols.

2.3.3 Design Engineering Manager

The Design Engineering Manager is a Registered Professional Engineer with a civil, chemical, or environmental engineering background having experience in those aspects related to design, construction, and waste handling for the project scope of work.

2.3.4 Remedial Contractor's Construction Manager

The Remedial Contractor's Construction Manager shall have demonstrated experience in construction and possess demonstrated knowledge of hazardous and non-hazardous waste handling and disposal requirements.

2.3.5 Inspection (QC) Staff

The Remedial Contractor's Inspection Staff will possess adequate formal training and sufficient practical technical and administrative experience to execute and record inspection activities successfully.

2.3.6 ECC Trust's Engineer

The ECC Trust's Engineer (Engineer) will be the direct representative of the Environmental Conservation and Chemical Corporation Trust (ECC Trust) and will be responsible for coordinating approval of all major field and design changes (Section 5.1) and communications between the Remedial Contractor and the ECC Trust.

3.0 QUALITY ASSURANCE OBJECTIVES

Quality Assurance for the construction of the Site Preparation Material Removal components will be maintained by planned and systematic actions which will ensure that the components conform with the project requirements and will perform satisfactorily.

The objectives of this CQAP are:

- To establish quality assurance guidelines for all of the SPMR phase construction.
- To maintain quality control through standardized procedures, documentation, inspections, and reporting.
- To establish the types of inspection, testing, and sampling activities and to provide required frequency.
- To assure inspection and sampling are carried out in accordance with established quality control procedures.

The quality assurance required for the construction aspects of the support zone components will be achieved by applying field observations and material certifications supplemented by testing standards as set forth by the American Society for Testing and Materials (ASTM), and requirements of the Indiana Department of Highways (IDOH), Standard Specifications (1988).

The specific procedures to be followed to achieve the quality assurance objectives for each element of work are described in the appropriate sections of this CQAP.

4.0 CONSTRUCTION COMPONENT EXAMINATION, MEASUREMENT, AND TESTING

The adequacy of workmanship during Site Preparation and Material Removal construction will be determined by visual examination, measurements, certifications, and testing. The extent to which each of these procedures will be employed is provided in Appendix A. The relative amounts of each type of inspection will vary as the work progresses. During the initial construction stages, the judgement of the Remedial Contractor CQC staff should be confirmed at frequent intervals by tests and measurements until their ability at determining adequacy by visual means is established. In some cases the amount of measuring and testing can be reduced as the work progresses, but it will not be eliminated.

Each type of inspection determines whether requirements of the plans and specifications are being met. The protocols for inspection are provided in Appendix B.

The CQC Manager has the authority to reject any workmanship or construction which does not meet the intent or the requirements of the plans and specifications.

4.1 Materials Inspection and Certifications

Materials used to construct the support zone components will be tested by, or at the direction of, the CQC Manager. The testing will occur before or during construction to assure compliance with the material specifications. All testing will be performed in accordance with the methods referenced in Appendix A.

Manufactured items, particularly the culvert pipes, pre-cast sumps, synthetic membranes, require manufacturer's certification verifying that those items meet the requirements of the specifications. The CQC Manager will review the data provided and visually inspect the item to assure compliance. The CQC Manager has the authority to reject the item, require additional information in keeping with the limits of the specifications, or conduct additional inspection as may be required.

Should the testing and/or certification establish that the material, item, or workmanship is not in accordance or does not meet the requirements of the plan or specifications, the following actions will be required.

- Manufactured Items - Any manufactured item which does not meet the requirements or intent of the plans or specifications will be rejected and not used in the construction.

- Construction Materials - Any materials which do not meet the requirements or intent of the plans or specifications will be rejected and not used in the construction.

- Workmanship - Any workmanship which does not meet the requirements or intent of the plans or specifications, or acceptable construction practice will be repaired, redone, or removed.

4.2 Measurements

4.2.1 General

The intent of the inspection and sampling strategies is to evenly distribute sample and in-situ test locations throughout the construction unit to provide a representative measurement of as-built quality. The particular location of any one sample or inspection will be left to the discretion of the CQC Manager. Materials not meeting design specifications shall be rejected.

4.3 Construction Quality Control Plan

The Contractor will be required to develop and submit to the Engineer a Construction Quality Control Plan (CQCP) as specified in Section 01300 of the Technical Specifications document. The Remedial Contractor will be responsible for the workmanship of his labor force and any subcontractors used during construction. The Project Manager will provide the CQC Manager and staff who will be responsible for testing of all active and completed construction elements and workmanship as outlined in the CQAP. The CQC Manager and staff will work separately from the construction team and will provide quality control reports to the Project Manager.

4.4 Quality Assurance Documentation

4.4.1 General

The CQAP will not be effective unless all critical construction activities that should be inspected are designated and personnel are assigned to each inspection task by the CQC Manager. This is accomplished by using standardized documentation forms covering the anticipated items that are to be inspected. The following reports and records will be prepared by the individuals indicated with distribution as noted. Table 4-1 indicates the responsible preparers/recipients and schedule of the required submittals for the Site Preparation and Material Removal phase. Appendix C provides the forms and logs required for documentation of the CQC activities.

4.4.2 Daily Report

The daily report will be prepared by the Construction Manager. This report is a summary of the day's activities which includes:

- Data on weather conditions
- Reports of all meetings held and their results
- Description and location of work areas
- Description of offsite materials received
- Decisions made regarding approval of materials or work done and/or corrective actions to be taken in instances of substandard quality

All of the daily inspection data sheets will be numbered sequentially and attached to this report. The originals will be filed with the Construction Manager and copies sent to the CQC Manager, the Project Manager, and the Engineer. A permanent and complete record of this information will be kept at the project Site.

4.4.3 Submittal Register

The Submittal Register provides a record of all submittals and transmittals related to materials and construction. Examples of items to be recorded include construction drawings, shop drawings, samples, equipment and materials, certifications, and test data. The Construction

TABLE 4-1

SUBMITTALS LIST

Submittal	Preparer of Submittal	Recipient of Submittal	Schedule of Submissions
Daily Report	Remedial Contractor's Construction Manager	Remedial Contractor's CQC and Project Managers, and Engineer	Daily
Submittal Register	Remedial Contractor's Construction Manager	Remedial Contractor's CQC and Project Managers, and Engineer	Weekly
Daily QC Reports	Remedial Contractor's Construction Manager	Remedial Contractor's Project and Construction Managers	Daily
Report of Field Changes	Remedial Contractor's Construction Manager	Remedial Contractor's Construction QC (To File Original), Project Manager, and Remedial Design Engineer's Project Manager	Per Occurrence
Progress Report	Remedial Contractor's Construction Manager	Remedial Contractor's Project Manager, and Engineer	Monthly
Non-Compliance Notification	Remedial Contractor's Construction QC Manager	Remedial Contractor's Project and Construction Managers	Per Occurrence
Manufacturer's and Supplier's Material Certifications with CQC Transmittal Form	Remedial Contractor's Construction QC Manager	Engineer	Daily or With First Shipment of Material
Construction QC Plan	Remedial Contractor	Engineer	Ten Days Prior to the per Work Conference
Final Certification of Completion	Remedial Contractor's CQC Manager	Engineer	Seven Days after Work Completion
Photographic Reporting Data Sheet	Remedial Contractor's Construction Manager	Engineer	Fifteen days after work completion
Corrective Actions Report	Remedial Contractor's Construction Manager	Engineer	As necessary

Manager will maintain this record, numbered sequentially, and will send copies to the CQC Manager, Project Manager, and the Engineer.

4.4.4 Daily Quality Control Reports

Daily Quality Control Reports shall be prepared to document inspections and field tests for the principal operations incorporated in the construction of the support zone components. Appended to these reports will be recorded pertinent observations in the form of notes, charts, sketches, photographs, or any combination of these. The original (or copy) will be filed by the CQC Manager with copies sent to the Construction Manager and the Project Manager.

4.4.5 Non-Compliance Notifications

Non-compliance Notifications will be prepared to document problems encountered and the corrective measures taken to alleviate the problem. The problems may relate to materials or workmanship that does not meet the plans and specifications. Notifications will be prepared as necessary by the CQC Manager with concurrence by the Construction Manager. The original shall be filed by the Remedial Contractor with copies sent to the Project Manager and the Engineer.

4.4.6 Report of Field Change

A report indicating changes to the originally specified construction will be prepared by the Construction Manager which will describe, in detail, the recommended change or changes that are made. Indication will be made as to whether this is an isolated case or general condition which will affect or change additional work or future specifications and drawings. The original shall be filed with the CQC Manager with copies sent to the Project Manager and the Remedial Design Engineer's Project Manager.

4.4.7 QC Transmittal Form

A standard transmittal form will be required when submitting any type of QC documentation (e.g., report, request, manufacturers/suppliers certifications, shop drawing, etc.). The transmittal form shall be used by all parties involved with the ECC Superfund Site Construction QA.

4.4.8 Storage of Records

During the construction of the support zone components, the Construction Manager will be responsible for all construction documents, including originals of reports and data sheets described in this section. Duplicates will be stored with the Project Manager. The CQC Manager will also receive construction records for his scrutiny and evaluation.

The documentation will be maintained throughout the construction period and the initial performance evaluation monitoring period. After the performance evaluation period is completed and all "fine-tuning" or modification of the remedial action has been carried out, the Construction Manager will transfer his file to the Engineer.

4.4.9 Photographic Reporting Data Sheet

A pictorial record of the work progress, problems, and corrective measures will be handled through photographic documentation generated during construction. Photographs will be identified as to the roll number, the frame number, the date, and the project. Photographs will document in-progress work or completed physical components. A description will be included of pertinent objects in the photograph identified and recorded. The negatives will be filed in the order taken and stored separately from the photographs. A data sheet, numbered sequentially, will be prepared by the Construction Manager, with copies to the CQC Manager and the Engineer. Two prints of photographs will be obtained, one set for the CQC Manager and one set for the Engineer.

5.0 FIELD CHANGES AND CORRECTIVE ACTION

5.1 Field and Design Changes

Once under construction, site conditions are likely to be encountered that may require some alterations or adjustment of the design as presented in the plans and specifications. Such field changes, when necessary, shall be implemented according to the following criteria:

- Minor changes, such as adjusting the position of an item, will require the written approval of the Project Manager or Construction Manager.

- Changes in the basic design, such as an adjustment of the material specifications or size of a component, will require the approval of both the Project Manager and the Remedial Design Engineer.

- Major changes, such as redirection of diversion channels, will require approval of the Project Manager, the Remedial Design Engineer, and the Engineer.

All changes will require approval of a Report of Field Change (Section 4.4.7). Minor changes may be approved by the Engineer and shall be documented by a Report of Field Change. Design changes will be made only with written agreement of the Construction Manager and Remedial Design Engineer, and will be adjusted within the Technical Specifications.

5.2 Construction Problems and Corrective Actions Report

Reports describing special construction situations, as required by the Engineer, shall be prepared by the Remedial Contractor's Construction Manager and cross-referenced to specific observation logs and test data sheets. These reports shall include the following information:

- An identifying sheet number for cross-referencing and document control.
- A detailed description of the situation or deficiency.
- The location and probable cause of the situation or deficiency.
- How and when the situation or deficiency was found or located.
- Documentation of the corrective action taken to address the situation or deficiency.

- Final results of any responses.
- Any measures taken to prevent a similar situation from occurring in the future.
- The signature of the CQC Manager, Construction Manager, and the Project Manager indicating concurrence.

The Project Manager shall be made aware of any significant recurring non-conformance with the design specifications by the Engineer. The Project Manager shall then determine the cause of the non-conformance and recommend appropriate changes in procedures or specifications to the Construction Manager. These changes will be submitted to the Remedial Design Engineer, if necessary, for approval. When this type of evaluation is made, the results shall be documented, and any revision to procedure, or design specification, will be approved by the Construction Manager, Remedial Design Engineer, if necessary, and the Engineer.

6.0 QUALITY ASSURANCE REPORTS TO MANAGEMENT

6.1 Construction Activity Reporting

The Engineer shall prepare periodic reports for the ECC Trust which summarize construction activities and the results of observations and tests. Progress reports shall be prepared at selected time intervals to document the status of the work. Certifications shall be prepared at the completion of major construction activities.

At the completion of the work, final documentation shall be prepared and shall include supporting field and laboratory test results.

6.1.1 Progress Reports

The Construction Manager shall prepare a progress report at time intervals established at the Pre-Construction Meeting and submit it to the Project Manager and the Engineer. As a minimum, this report shall include the following information:

- A unique identifying sheet number for cross-referencing and document control.
- The date, project name, location, and other information.
- A summary of work activities during progress reporting period.
- A summary of construction situations, deficiencies, and/or defects occurring during the progress reporting period.
- A summary of test results, failures and retests.
- The signature of the CQC Manager.

The Project Manager shall distribute copies of the Progress Reports as decided at the Pre-Construction Meeting.

6.1.2 Final Certification of Completion

At the completion of the work, the CQC Manager shall submit to the Engineer the signed Final Certification of Completion. At a minimum, the Final Certification of Completion shall include:

- Summaries of all construction activities
- Observation logs and test data sheets including sample location plans and supporting field and laboratory test results
- Construction problems and solutions reports
- Changes from design and material specifications
- Record plans
- A summary statement signed by the Construction Manager and Project Manager that agrees with the conclusions of the Final Certification of Completion

APPENDIX A

INSPECTION AND TEST METHODS

TABLE A-1

INSPECTION AND TEST METHODS
PAGE 1 OF 6

Item	Inspection Method and Frequency	Test Method Reference
Access Road and Support Zone Surfaces		
Materials/Workmanship		
Suitable Fill	Observation (Verify Compliance to Design) - Daily Grain Size Analyses - (1) Representative Borrow Area Sample Per Day for Confirmation of Specification	ASTM D422
Subbase Course (IDOH No. 2)	Observation (Verify Compliance to Design) - Daily Supplier's Certificate - With First Shipment of Item	NA
Surface Course (IDOH No. 53 Aggregate)	Observation (Verify Compliance to Design) - Daily Supplier's Certificate - With First Shipment of Item	NA
Geotextile	Observation (Verify Compliance to Design) - Daily Manufacturer's Certificate - At Time of Delivery of Item	NA

TABLE A-1

INSPECTION AND TEST METHODS
PAGE 2 OF 6

Item	Inspection Method and Frequency	Test Method Reference
Decontamination Pad		
Materials		
Aggregate Subbase (4 inch IDOH No. 2)	Observation - Daily Supplier's Certificate - With First Shipment of Item	(Rolled and Approved Only)
Pre-Cast Concrete Sump Section	Observation (Compare to Approved Shop Drawing) - Daily Manufacturer's Certification for Strength, Air Content, Slump - With First Shipment of Item	 ASTM C94 (by supplier)
Overflow Pipe (6 inch Schedule 80 PVC)	Observation (Compare to Approved Show Drawing) - Daily Manufacturer's Certificate - At Time of Delivery of Item	NA NA
Cast Iron Grates, Lids, and Frames	Observation (Compare to Approved Show Drawing) - Daily Manufacturer's Certificate - At Time of Delivery of Item	NA NA
Pressure Treated Lumber	Supplier's Certificate - At Time of Delivery of Item	NA
Geotextile Screen	Observation - Daily Manufacturer's Certification - At Time of Delivery of Item	NA NA
PVC Waterstops and Waterproof Grout	Manufacturer's Certification - At Time of Delivery of Item	NA

TABLE A-1

INSPECTION AND TEST METHODS
PAGE 3 OF 6

Item	Inspection Method and Frequency	Test Method Reference
Workmanship		
Installation of Pre-Cast Manhole	Observation (Verify Compliance to Design) - Daily	NA
Overflow, Precast Manhole, and Trench Sump Connections	Observation (Verify Compliance to Design) - Daily	NA
Seals (Water Stops and Grout)	Observation (Grout Sealant Placement and Volume) - Daily	NA
Cast-in-Place Concrete	Observation (Verify Compliance to Design) - Daily Slump - One Per Day of Pouring Compressive Strength - One Per Day of Pouring	NA ASTM C143 ASTM C31
Pour Forms	Observation (Compared to Approved Shop Drawings) - Daily	NA

TABLE A-1

INSPECTION AND TEST METHODS
PAGE 4 OF 6

Item	Inspection Method and Frequency	Test Method Reference
Wastewater Storage Pad		
Materials		
Pre-Fabricated HDPE Sump	Manufacturer's Certification - At Time of Delivery of Item	NA
HDPE Liner	Supplier's Certification - At Time of Delivery of Item	NA
Perforated HDPE Pipe	Supplier's Certification - At Time of Delivery of Item	NA
Geotextile Separating Fabric	Supplier's Certification	NA
Workmanship		
Cast-in-Place Concrete	Observation (Verify Compliance to Design) - Daily Slump - One Per Day of Pouring Compressive Strength - One Per Day of Pouring	 ASTM C143 ASTM C31
Pour Forms	Observation (Compare to Approved Shop Drawings) - Daily	NA
Extrusion Welds (Pipe to Sump)	Observation (Verify Compliance to Design) - Daily	NA
Excavation and Anchor Trench	Observation (Verify Compliance to Design) - Daily	NA
Placement of Aggregates and Liner	Observation (Verify Compliance to Design) - Daily	NA

TABLE A-1

INSPECTION AND TEST METHODS
PAGE 5 OF 6

Item	Inspection Method and Frequency	Test Method Reference
Diversion Channels		
Materials		
Revetment Riprap (IDOH Standard Specification 1988, 616.02(b))	Observation - Daily Suppliers Certificate - At Time of Delivery of Item	NA
Culverts (Reinforced Concrete Pipe)	Observation (Verify Compliance to Design) - Daily Manufacturer's Certification - At Time of Delivery of Item	NA
Workmanship		
Trench Excavation	Measurement - Maximum Tolerance ± 0.20 Feet Horizontal/Vertical - Daily	NA

TABLE A-1

INSPECTION AND TEST METHODS
PAGE 6 OF 6

Item	Inspection Method and Frequency	Test Method Reference
Fencing		
Materials		
General Fencing	Observation - Daily Manufacturer's Certification - At Time of Delivery of Item	NA
Gates	Observation - Daily Manufacturer's Certification - At Time of Delivery of Item	NA
Workmanship		
Post Spacing and Placement	Observation (Verify Compliance with Survey) - Daily	NA
Gate Locations	Observation (Verify Compliance to Design) - Daily	NA

APPENDIX B

INSPECTION PROTOCOLS

INSPECTION PROTOCOLS

General

This appendix provides the basic elements which will require inspection activities (observations and tests) necessary to ensure that the support zone components are constructed to meet design criteria, plans, and specifications.

Access Road and Support Zone Surfaces

The access road and support zone surface should provide an evenly contoured surface free of vegetation and other objectionable and deleterious materials. Daily observations are necessary to address the following items as a minimum:

- Work area location
- Area defined by survey or other means
- Area cleared of vegetation and appropriate stockpile of removed topsoils
- Area cleared of objectionable and other deleterious materials
- Any springs and seeps
- Disposition of any springs and seeps
- Compacted fill, base, and finished surface aggregate dimensions
- Replacement of topsoil layer along area shoulders
- Problems

Decontamination Pad

Elements associated with the decontamination pad include the pre-cast concrete manhole, PVC overflow pipe, and grating. Inspections required for these items and associated work include:

- Pad location.
- Cast-in-Place concrete.
- Depth of sump trench.
- Visual checks of materials for compliance to specifications (pipes, pre-cast manhole, rebar, trench frame, welded wire reinforcement, geotextile screen, pressure-treated lumber, waterproof mortar, and water stops, etc.).

- Dimensions (pad, sump trench, curb, etc.).
- Slopes (concrete and overflow pipe).
- Visual check or placement of water stops and waterproof mortar.
- Visual check on screen placement and lumber support network.
- Tests results (concrete).
- Problems.

Wastewater Storage Pad

The elements to be considered for inspection concerning the wastewater storage pad are:

- Pad location
- Excavation and anchor trench location
- HDPE liner condition
- Geotextile separating fabric
- Pre-fabricated HDPE sump
- Perforated HDPE pipe
- Material certifications received
- Visual checks on placement of aggregate, HDPE pipe, and sump
- Visual checks on extrusion welds connecting pipe to sump
- Seaming (only if required due to defects or damage in liner)
- Slope
- Dimensions
- Test results (concrete)
- Problems

Support and EZ Boundary Fence and Gates

Fencing will be placed to separate outside property from the support and EZ areas with gates located at required points of entry and exit. Aspects to be considered in the placement of fencing and gates are:

- Location (surveyed lines)
- Check of materials

- Positioning and swing of gates
- Problems

Diversion Channels

Diversion Channels will be placed as controls as shown on Drawing C-1 of the Contract Drawings. Inspections required for these channels are:

- Location (survey lines)
- Trenching
- Riprap placement
- Visual check on riprap, culverts (RCP), revegetation

APPENDIX C

CQC REPORT FORMS

ECC SITE
ZIONSVILLE, INDIANA
PROJECT NUMBER _____

TRANSMITTAL

To: _____ Project: _____

_____ _____

Date: _____ Our Job No.: _____

We are enclosing _____ copies of the following:

- ☐ Subcontract Agreement
- ☐ Shop Drawings
- ☐ List of Materials
- ☐ Plans
- ☐ Specifications
- ☐ Submittals List
- ☐ Daily Report
- ☐ Progress Report
- ☐ _____
- ☐ Photograph Data Sheet
- ☐ Report of Field Change
- ☐ Daily QC Report
- ☐ Non-Compliance Notice
- ☐ Final Certification
- ☐ For Your Use
- ☐ For Review and Comment
- ☐ For Approval

Remarks: _____

_____

_____

_____

_____

_____

Copies to: _____ By: _____

_____ _____

_____ _____

_____

CONSTRUCTION MANAGER'S DAILY REPORT

ECC SITE
ZIONSVILLE, INDIANA
PROJECT NUMBER _____
REPORT NUMBER _____

Date: _____

Day	S	M	T	W	TH	F	S

WEATHER	Brite Sun	Clear	Overcast	Rain	Snow
TEMP.	To 32	32-50	50-70	70-85	85 up
WIND	Still	Moder	High	Report No.	
HUMIDITY	Dry	Moder	Humid		

Average Field Force			
Name of Contractor	Non-manual	Manual	Remarks

Visitors			
Time	Representing	Representing	Remarks

Equipment at the Site: _____

Construction Activities: _____

By: _____ Title: _____

Distribution:
1. Project Manager
2. CQC Manager
3. Engineer
4. Site File

CONSTRUCTION MANAGER'S
MONTHLY PROGRESS REPORT

ECC SITE
ZIONSVILLE, INDIANA
PROJECT NUMBER _____

Work Accomplished by Contractor: _____

Work Anticipated for Next Month: _____

Problems: _____

By: _____ Title: _____

Distribution:
1. Project Manager
2. CQC Manager
3. Engineer
4. Site File

CONSTRUCTION MANAGER'S
MONTHLY PROGRESS REPORT
(Continuation Sheet)

Work Accomplished by Contractor (Continued)

By: _____ Title: _____

Distribution:
1. Project Manager
2. CQC Manager
3. Engineer
4. Site File

ECC SITE
ZIONSVILLE, INDIANA
PROJECT NUMBER _____

PHOTOGRAPHIC REPORTING DATA SHEET

Date: _____

Time Period Photographs Were Taken: _____

Roll Number: _____ Frame Number: _____

General Description of Photographs: _____

_____

_____

_____

_____

_____

_____

_____

_____

Any Specific Items for the Record: _____

_____

_____

_____

_____

_____

_____

_____

_____

By: _____ Title: _____

Distribution:
1. Project Manager
2. CQC Manager
3. Construction Manager

ECC SITE
ZIONSVILLE, INDIANA
PROJECT NUMBER _____

REPORT OF FIELD CHANGE

Date: _____

REFERENCE DATA

Specification Section No.: _____ Page No.: _____ Paragraph No.: _____

Drawing No.: _____ Entitled: _____

Sketch No.: _____ Dated: _____ Entitled: _____

DESCRIPTION

1. Detailed Identification of the Problem: _____

_____

_____

_____

2. Detailed Solution Proposed or Accomplished: _____

_____

_____

_____

_____

_____

_____

3. Is the Problem an Isolated Case or General? _____

4. Submit Sketches as Necessary

By: _____ Title: _____

Approved By: _____

Distribution:
1. Project Manager
2. CQC Manager
3. Remedial Design Engineer's Project Manager

ECC SITE
ZIONSVILLE, INDIANA
PROJECT NUMBER _____

DAILY QUALITY CONTROL REPORT

Date: _____

Weather: _____

Work Performed: _____

DAILY QUALITY CONTROL REPORT
PAGE 2 OF 2

Date: _____

Material/Equipment Delivered (Identify Supplier and Quantity):

_____

_____

Results of Inspections (See Attached Inspection Report): _____

_____

_____

Results of Testing (See Attached Testing Report): _____

_____

_____

_____

_____

Verbal Instructions and/or Comments: _____

_____

_____

_____

Remarks (Including Deficiencies/Corrective Actions): _____

_____

_____

_____

CERTIFICATION: I certify that the above report is complete and correct and that I, or my authorized representative, have inspected all work performed this day by the prime contractor and each subcontractor and have determined that all materials, equipment, and workmanship are in strict compliance with the plans and specifications except as may be noted above.

_____ _____

Signature Date

Distribution: 1. Project Manager
2. Construction Manager

ECC SITE
ZIONSVILLE, INDIANA
PROJECT NUMBER _____

To: _____

Date: _____ Time (AM/PM): _____ Inspector: _____

Contractor: _____ Contract No.: _____

You are hereby notified that ☐ tests ☐ inspection indicates that the _____

_____

does not conform to the Specifications requirements. The specification violated is

Section _____ Article/Paragraph _____. Under the provisions of the Contract

Specifications, the requirements are _____

_____

_____

Noncomplying work may be required to be removed and replaced at no cost to the ECC Trust.

It shall be your responsibility to determine the corrective action necessary, and to determine whether you wish to discontinue operations until additional investigations by the ECC Trust or Engineer confirm or refute the initial findings.

_____
Construction QC Manager

Noncompliance notice was received by the Contraction Manager on _____(date).

By: _____ Title: _____

Distribution:
1. Construction Manager
2. Project Manager
3. Site File

FINAL CERTIFICATION OF COMPLETION

ECC SITE
ZIONSVILLE, INDIANA
PROJECT NUMBER ____________________

To: ECC Trust Date: ____________________

Attn: ETC Engineer

From: ____

- -

This is to certify that I, ____________________________________ am an authorized

official of ____

working in the capacity of ____

and have been properly authorized by said firm or corporation to sign the following statements pertaining to the subject contract:

> I know of my own personal knowledge, and do hereby certify, that the work of the Contract described above has been performed, and materials used and installed in every particular, in accordance with, and in conformity to, the Contract Drawings and Specifications.
>
> The Contract work is now complete in all parts and requirements, and ready for your final inspection.

By: ____________________________________

Title: ____________________________________

For: ____________________________________

Distribution: 1. Project Manager